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Electronic Business

FOR MANAGEMENT IN ELECTRONICS, COMPUTER & SYSTEMS COMPANIES — WORLDWIDE

FEBRUARY 19, 1990

UNISYS WINS
Our 1990 Electronics Factory Automation Award

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Successful strategies for product transitions

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What's hot in Europe: Automatic test equipment

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Dennis Sullivan, automation expert at Unisys' Roseville, Minn., plant

Electronic Business

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VOL. 16, NO. 4

FEBRUARY 19, 1990

Cover photograph: Paul Shambroom

PAGE 22 Unisys automation expert Dennis Sullivan: "You have to be willing to invest in quality"

COVER STORY/FACTORY AUTOMATION

22 This Unisys plant is full of surprises

Unisys is the winner of our 1990 Factory Automation Award for its printed circuit board assembly facility in Roseville, Minn. The Roseville automation project, started way back in 1983 when plant management began to look for ways to sharply cut back on overhead, has the fastest turnaround — from design to prototype to full production — in the West. Engineers put their prototypes to the test only hours after dreaming them up. Added bonus: Improved quality, faster time to market and speedier response to market changes.

BUSINESS TRENDS

17 Contract manufacturing thrives on fast SMT growth

Demand for surface mount board assembly work from contract manufacturers is on the rise. Original equipment manufacturers, a group not usually in the habit of subcontracting board assembly work, are now regularly turning to these savvy contractors to save time and postpone the need to purchase costly new surface mount assembly equipment.

FACTORY AUTOMATION

22 This Unisys plant is full of surprises

The winner of this year's Factory Automation Award is the Unisys printed circuit board assembly facility in Roseville, Minn. Set in motion by a mandate to reduce overhead costs, Unisys' managers have surpassed their original inventory turnover goals and created a factory automation scheme that works without the volumes needed to support a typical "lights out" operation.

STRATEGIES

34 What are the secrets of product transition?

Managing the transition to a new line of products can be one of the most daunting tasks computer vendors face. Changing manufacturing, marketing and sales operations over to a new product line while trying to maintain sales of older products has thrown many a company into a revenue slump and even put a few out of business. To keep the line moving in the shift from old products to new, managers must make decisions early, keep customers informed, and maintain compatibility.

47 Tiny resistor maker keeps its eyes on the Baldrige prize

After failing to win a Baldrige National Quality Award in 1988, Vamistor may have a running start on its competition for next year. President and CEO John Boatman believes that competing for the prize was a valuable lesson in shaping up his company's quality consciousness. "It gave us a good, objective road map for achieving quality," he says. "We're preparing for next year by attacking all the weak areas from '88."

MANAGING RESOURCES

55 High-tech capital spending takes a low-tech growth path

High-tech capital spending seems likely to limp through 1990, showing little growth amid economic sluggishness and intense competition in the technology marketplace. Semiconductor makers are among high tech's most capital-intensive industries; their capital outlays are likely to drop this year, although not nearly as much as in prior down years.

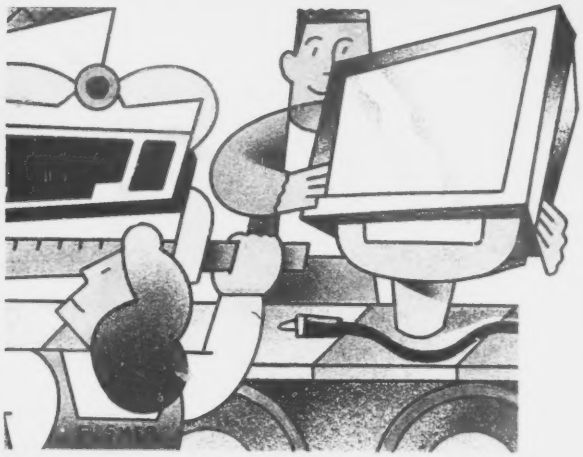
EUROPE BUSINESS

61 Europeans want more and more ATE at a lower cost

European industry is spending more freely on automated manufacturing equipment to improve productivity, creating a boom for global ATE vendors and for a host of European ATE firms. But to stay competitive, U.S. vendors have had to respond to demands by European customers for cheaper and more flexible machines, which they have had to sell and support on an increasingly pan-European basis.

PAGE 79 Wyse's Bernard Tse: The purchase of Wyse by Taiwanese consortium shapes up as a natural

PAGE 47 Vamistor's John Boatman: Preparing for next year's Baldrige Award



PAGE 34 Successful product transition keeps the line moving from oid products to new

PAGE 105 Business Barometer: Optimistic semiconductor bookings

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PAGE 55 Western Digital's Bert Moyer: Bucking the trend in high technology capital spending cuts

ASIA/PACIFIC BUSINESS

79 Wyse sale may signal a boom in U.S.-Taiwan deals

Although the Wyse sale marked the first time a Taiwanese concern has bought out all of the stock of a U.S. company, the purchase may signal the start of many more such deals between Taiwanese and U.S. companies. The Taiwan government has been boosting overseas corporate acquisition as key to the future prosperity of the island's computer industry.

85 Molex's China strategy: Find markets outside China

Late last year, while other foreign companies were still wondering what to do with their Chinese operations following the Tiananmen incident, connector manufacturer Molex made a surprising move to hold the formal grand opening of its first manufacturing facility in China. In operation since January 1989, the factory kept on running during the height of the country's political unrest.

MARKET PERSPECTIVES

89 Rising system speeds boost multichip module demand

Growing demand for faster board speeds, improved system reliability, and higher density in smaller packages all point to a healthy and growing market for multichip modules. The most successful multichip merchants will be able to penetrate the high-performance workstation and personal computer market.

95 Keyboard makers shift costs down to lock in profits

Cutthroat price competition, spurred on by manufacturers in Taiwan and Korea, has accelerated the industry-wide shakeout and squeezed industry profit margins. But domestic keyboard makers are succeeding with higher quality keyboards that can command a higher price than foreign-made keyboards. And newer technologies such as membrane-based keyboards are helping manufacturers succeed in getting costs down and inching profits up.

BUSINESS BAROMETER

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No cold shoulder here

"Manufacturing gets the cold shoulder" was one of the headlines in our June 12, 1989, "Tomorrow's Leaders" cover story, for which we assembled graduate students in engineering and business from MIT, Wharton, Stanford and UCLA. We wanted to get their views on the future of the U.S. computer and electronics industries. More than 40 students convened for a series of four focus groups.

As the manufacturing headline and story suggest, most of the participants in our research sessions didn't have much enthusiasm for what happens on the factory floor, one even saying, "Manufacturing in the United States is a place where people go to disappear." There were few so-called "manufacturing types" in our focus groups.

While such an attitude from students may not be surprising, our 1990 Factory Automation Award winner shows there are scores of managers out there who do get excited by the complex problems of manufacturing. Our award this year goes to Unisys Corp.'s printed circuit board assembly operation in its Roseville, Minn., mainframe plant.

Assistant editor Peter Burrows and managing editor J. William Semich discovered during a wintry visit to Roseville that in the Unisys plant these manufacturing enthusiasts welcomed the opportunity to share their inspirations. They found challenges in manufacturing, and they're proud of what they've accomplished.

In his story, Peter chronicles how Unisys manufacturing engineers are orchestrating such automation processes as insertion machines, robots and bar-code readers to accomplish a manufacturer's dream: assembling boards in single-lot quantities without retooling. At the same time, they have reduced overhead and interest costs, enhanced product quality and improved customer and supplier relationships.

Unisys' Dennis Sullivan: Excited about manufacturing

Dennis Sullivan, group manager for manufacturing engineering, who was in charge of setting up the Roseville system, was one of several Unisys personnel Peter interviewed. The excitement Sullivan and others have for manufacturing is clear. And it's refreshing.

The Factory Automation Award is an annual honor that ELECTRONIC BUSINESS and sister publication *Electronic Packaging & Production* bestow to the U.S.-owned plant that we believe has done the best job developing new automation techniques to ensure quality, timeliness and cost efficiency.

MARVIN GREENE, section editor

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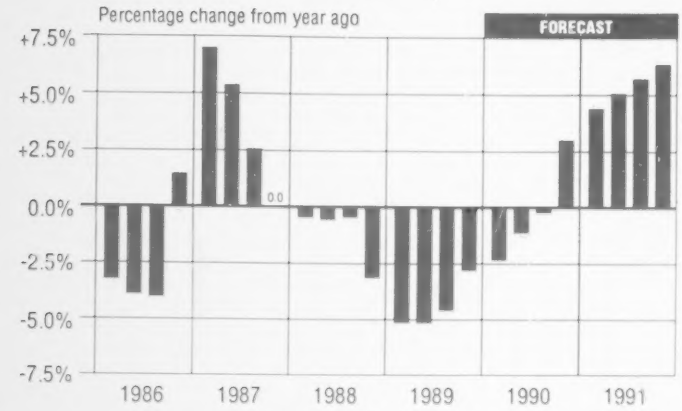
BPA ABP

Communication equipment: Industrial production

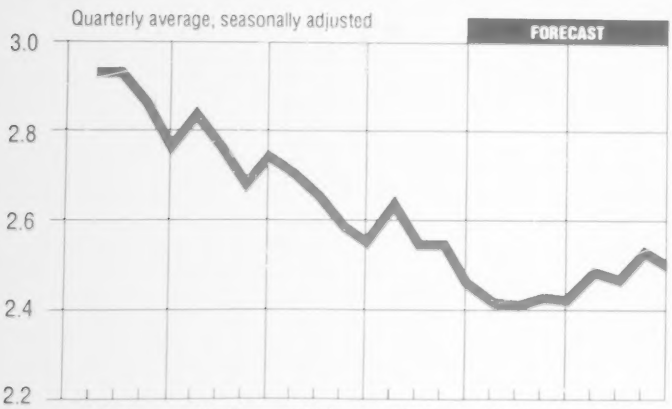


Data source: Federal Reserve Board; Forecast: Cahners Economics

Communication equipment: Employment

Data source: U.S. Commerce Dept.; Forecast: Cahners Economics

Communication equipment: Inventory/shipments ratio



Data source: U.S. Commerce Dept.; Forecast: Cahners Economics

Communications output slides

Production of communication equipment fell below year-ago levels for the 15th straight month this past October. Output inched down 0.1% from September to October and sunk 2.6% from October 1988. Even during the last electronics recession in 1986, output of communication equipment fell below the prior-year level for a shorter nine months. What is worse, Cahners Economics expects this downward trend from year-ago levels to continue through the rest of this year, with production off 0.2% compared with 1989.

The slowdown is wreaking havoc on the industry's employment. As of October 1989, total employment in the communication equipment industry averaged 529,900 persons, down 131,200 workers from the peak in July 1985. More than 60% of the employment loss has been in production workers. Employment will continue to shrink this year as businesses react to slower economic growth and changing business conditions in the industry. Cahners Economics expects total employment to decline another 3% in 1990.

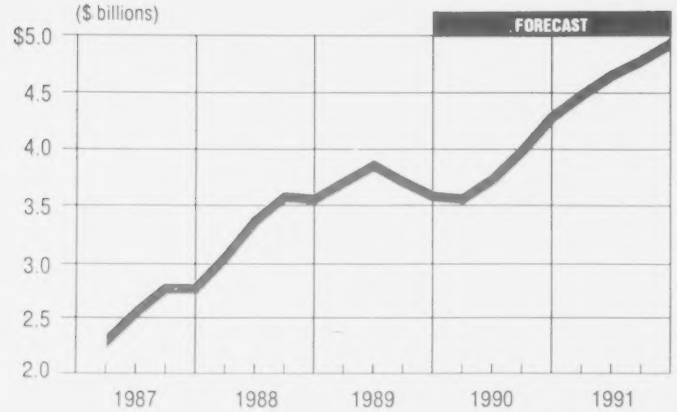
Although the production and employment cutbacks have been wrenching, they have kept inventory levels in check for the past four years. In October, inventory totaled $16.2 billion, just about even with the prior year and up just 1% from the $16 billion in October 1986. So, although growth in shipments has remained in the low single-digits since the end of 1986, the months of inventory on-hand has remained relatively low. In October, the inventory-to-shipments ratio stood at 2.50, well below the monthly peak of 3.03 recorded in January 1986.

Another factor in the industry's favor is its relatively high level of unfilled orders. The build-up throughout the late 1970s and early 1980s had pushed unfilled orders over the $67 billion mark by the end of 1987. In October of last year, backlogs had receded, but still amounted to almost $63.9 billion.

The scale-down in inventory and the hefty backlogs leave the industry in healthier shape to help ward off the economic malaise this year and take advantage of the business cycle upswing next year. Production is expected to expand 5% next year. Unfortunately, the growth in output will not be accompanied by a similar increase in employment. Our forecast calls for a smaller 1% job gain in the communication equipment sector.

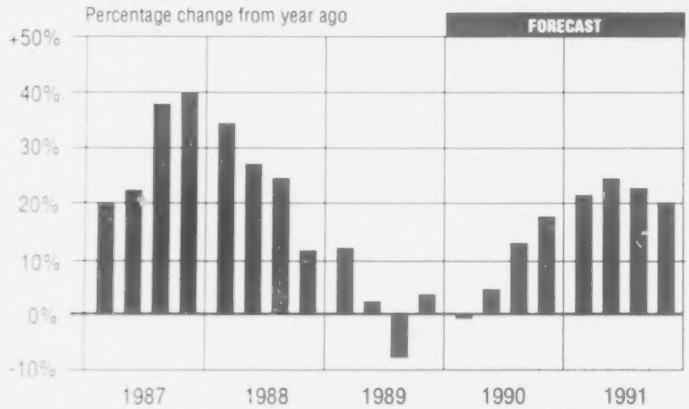
MADELINE FRANCHI

Semiconductors: Sales to North America



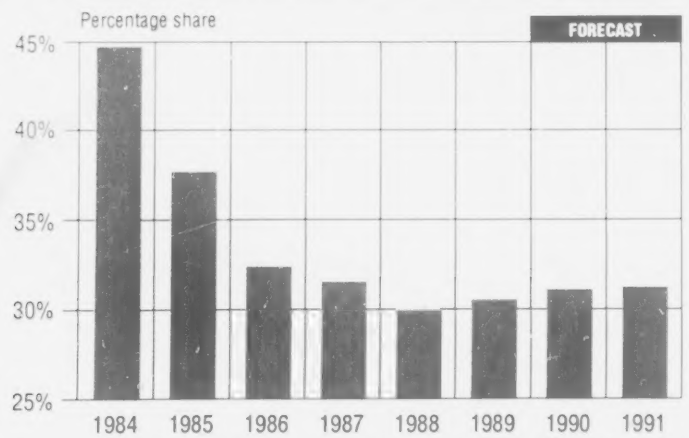
Data source: Semiconductor Industry Assoc.; Forecast: Cahners Economics

Semiconductors: New orders in North America



Data source: Semiconductor Industry Assoc.; Forecast: Cahners Economics

U.S. share of worldwide semiconductor consumption



Data source: Semiconductor Industry Assoc.; Forecast: Cahners Economics

Positive signs may mean robust chip sales

Semiconductor bookings in the U.S. market took an unexpected turn upward in the final quarter of 1989. After a precipitous 8% year-ago decline last summer, bookings rose about 3% last autumn above 1988 levels. The book-to-bill ratio, however, continued to languish at 0.93, meaning for every $1 sold only 93 cents of semiconductors were ordered.

Still, the bookings data are encouraging, especially coupled with a few other positive signals emanating from the U.S. electronics industry. First and foremost, the ELECTRONIC BUSINESS leading indicator appears to have passed its trough last September. Data for October and November and partial monthly data for December seem to confirm a turnaround. If this holds true, then growth in U.S. semiconductor sales is likely to bottom out and begin heading upward in the first or second quarter of this year.

The other positive supporting evidence comes from distributors. This market often responds early to shifts in economic conditions and the past year has been no exception. Orders to distributors, as measured by the National Electronic Distributors Association, had fallen below year-ago order levels for nine consecutive months beginning in December 1988.

Last September, however, distributor orders bounced upward 7.4%. So what? Orders jump around all the time and one month does not a trend make. But luckily, orders to distributors advanced again at a 14.8% year-ago rate in October and 11.9% in November.

Unfortunately, all this recent data may not be reflected by more optimistic business plans in the electronics industry. Company planners seem to be extremely cautious, reacting still to the 1985-1986 debacle in sales rather than to the far more muted and manageable business slowdown of 1989 and 1990. The tide in the current slowdown is turning now. Electronics executives who recognize this now and plan for a much more robust second half of 1990 will reap the rewards for taking risks that the pessimists are avoiding.

ELIZABETH B. BAATZ

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